

REGENERATIVE AGRICULTURE

Healthy soil, healthy land for the future

Regenerative agriculture is a term used to describe a set of farming practices focused on enhancing soil health.¹ Many farmers use regenerative agriculture methods.

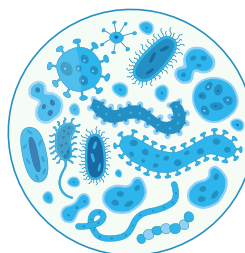
WITHOUT HEALTHY SOILS WE CANNOT GROW FOOD.

Soil is a living **ecosystem**, consisting of organisms, their physical environment and their interrelationships in a unit of space. It is composed of minerals, organic matter and pores that are filled with either moisture or air.² **Soil organic matter** includes decaying plant material and **soil organisms**, including insects, worms, and **microorganisms** like bacteria and fungi that make their home in the soil.

Carbon is critical to soil function and productivity. One goal of regenerative agriculture is to improve **carbon sequestration** – soil's ability to store carbon as soil organic matter. The other goal is to increase the activity of soil microorganisms that are necessary for healthy soils to break down plant matter.³

Principles of regenerative agriculture

One or many regenerative agriculture practices are used on farms across Canada. Regenerative agriculture brings multiple strategies together to support soil health, including:⁴



- Minimizing **tillage** (mechanical disturbance of soil) helps reduce the release of soil carbon into the air. This leads to higher soil carbon and nutrient content, and improves soil's ability to hold water. Through **zero tillage**, farmers use special equipment to plant seeds directly into **residues** (stalks or **stubble**, stems and leaves) of the previous crop. This helps hold soil in place and adds organic matter and nutrients to the soil. It also prevents **soil erosion** (washing or blowing away of soil) and encourages water to infiltrate soils so it is available for plants to use as they grow.

- **Cover crops** are planted with, into or after the main crop to protect from soil erosion by holding soil together.⁷ Examples include grasses like rye, barley or oats, and sometimes legumes such as field peas. In addition, cover crops can be used as **forage crops** for feeding livestock, such as beef, sheep or goats, or left in the ground to build healthier soil.



Zero tillage

- Planting different crops in a field from one year to the next is called **crop rotation**. Increasing the variety of crops in a rotation ensures soil nutrients aren't depleted and helps improve crop growth and **yield** (production).

- **Intercropping** by seeding more than one main crop together is another practice that increases crop diversity.

- **Introducing grazing livestock to cropland** has multiple benefits. Livestock eat cover crops which reduces feed costs, and the manure they produce recycles nutrients from their food back into the soil. Livestock products also provide additional income for farmers.



Cross-section of healthy topsoil with deep root systems



Pea & mustard intercrop



WHY REGENERATIVE AGRICULTURE IS BECOMING POPULAR

Farmer economic resilience – By restoring and enhancing natural ecosystem processes like water and nutrient cycling, regenerative agriculture improves ecosystem function. This gives farmers the ability to manage through extreme weather conditions more easily. It may also reduce the need for inputs such as fertilizer, which means lower cost of production.

Soil Health – Healthier soil can hold more water, increasing its ability to adapt during floods and droughts, and supply more nutrients to plants. When the physical and chemical characteristics of a soil are optimal, biological activity increases, improving plant health.⁸

Water Health – Regenerative practices may reduce agriculture's impact on water quality. They help protect and restore clean water in nearby streams, rivers and lakes by preventing soil erosion and nutrient runoff from fields.⁹

Biodiversity – Regenerative practices increase the diversity of plants, grazing animals, wildlife and insects. This assists with improving soil health and building resistance to pests and diseases in farm and ranch ecosystems. Wildlife also benefit from grasslands and wetlands habitats.



Healthy soil attracts beneficial insects such as ground beetles which feed on insect pests that can damage plants. Healthy soil produces healthy crops that attract bees to pollinate plants.



Bald eagles

IN CANADA, **ZERO-TILL** PRACTICES (LEAVING 70-75% OF PREVIOUS YEAR'S CROP STALKS TO REMAIN VISIBLE ON THE FIELD SURFACE⁵) ARE USED TO PREPARE 56% OF LAND AREA FOR SEEDING.⁶



Ground beetle

